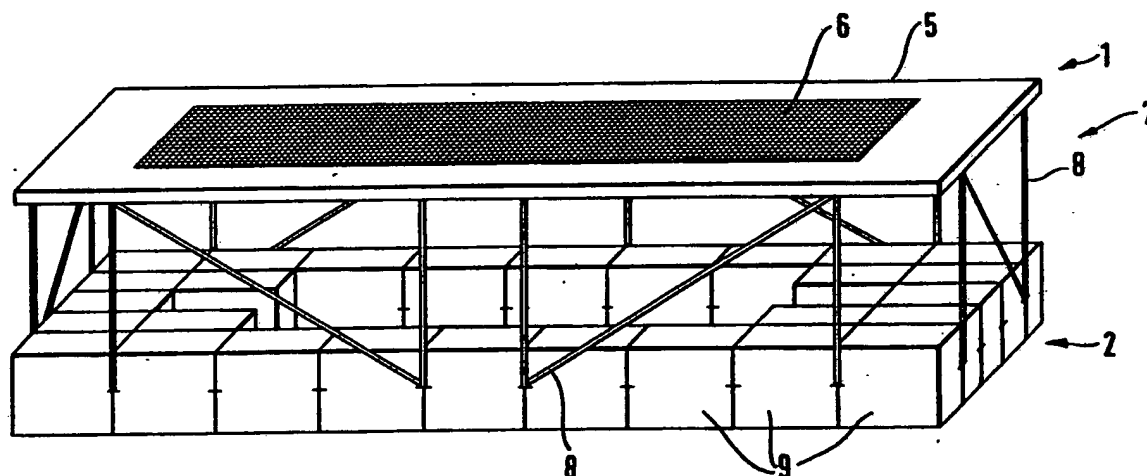




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(54) Title: AQUATIC TRAMPOLINE



(57) Abstract

The trampoline (1) has a holder (5) and a braced web (6) therein, the holder being secured to a float body (2) via a support frame (7). The float body is preferably formed such that at least in the jump region it protrudes with its outer edge no further than the outer edge of the trampoline. The apparatus can thus be used without danger as a diving platform with or without a trampoline effect.

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AQUATIC TRAMPOLINE

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The invention relates to sport and/or leisure apparatus comprising a trampoline having a holder and a braced web therein, and a support structure secured 10 to the holder.

Trampolines enjoy great popularity not only as leisure equipment but also as competitive sport apparatus. In its simplest form, the trampoline is 15 placed over a pit, the holder being constructed in this case as a peripheral frame. This embodiment is particularly suitable for children's playgrounds. In contrast, sport apparatus generally has a floor-standing support structure, which under some 20 circumstances performs the bracing functions of the holder. The apparatus may be a stationary installation. Also position-independent transportable apparatus is customary.

25 Although such apparatus can already be used in many different ways, any improvement of this flexibility is sure to find ready acceptance.

The invention is accordingly based on the object of 30 widening the possibilities for installing the apparatus of the type initially defined.

To achieve this object, the sport and/or leisure apparatus according to the invention is characterised 35 in that the support structure is buoyant. Preferably, the support structure includes a float body which, at least over a part of its periphery, protrudes with its outer edge substantially no further than the

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outer edge of the trampoline.

The apparatus according to the invention thus floats on water, so that it can be used for sport and play
5 on lakes or on the sea. Generally, the apparatus will be anchored near the shore. As a result of the mobility of the float body on the water surface, and its variable submersion and rolling characteristics, the spring properties of the trampoline will be
10 affected in a somewhat unpredictable manner, so that leisure enjoyment is increased or the demands on the athlete are increased.

Above all, the apparatus can be used as a jumping or
15 diving platform, the diver/jumper being projected in or through the air before immersion in the water. To the extent that a defined diving zone is provided, it may be sufficient to ensure that only in that zone the float body protrudes substantially not beyond the
20 trampoline. As a rule, diving will be permitted in any direction and the float body appropriately formed. This also then removes any danger from an unexpected sudden fall into the water. For safety's sake the float body can be formed such that it lies
25 entirely beneath the trampoline.

Of course, the apparatus can also be used as a simple bathing platform or as a diving platform without using the trampoline effect.

30

Transport of the apparatus along the shore or even to the centre of a lake offers no difficulties since the apparatus can be towed after release of the anchor.

35 Occasional installation in open air or indoor swimming pools is also conceivable.

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Altogether, the possibilities for use are astonishingly increased.

In a further development of the invention, the holder
5 has a padded frame which covers and is spaced from
the bracing of the web. The frame offers the
possibility of walking or sitting on the edge of the
trampoline. Also, jumping or diving from the frame
into the water is possible. The padding protects the
10 user against possible injury during jumping or
falling. The arrangement ensures that nevertheless
the outer dimension of the apparatus is not
increased. The trampoline and its bracing, which
generally consists of springs, is thus secured on the
15 outer periphery of the frame. The frame thus extends
across the spring region, which otherwise would
remain unused. The spacing between the frame and the
springs ensures that no obstruction of the trampoline
movement is possible.

20

Advantageously, the frame has a triangular
cross-section. A downwardly extending limb of the
section forms an anchor point for the springs whilst
a horizontal limb carries the frame padding. The
25 connecting limb, extending obliquely upwards, creates
the necessary free space for the springs.

Advantageously, the frame is padded with a layer of
elastic material which in cross section is outwardly
30 convex, and which protrudes beyond the frame, at
least in an inward direction. The rounded shape
provides optimal security against injury. This
applies in particular to the inner edges of the
frame. To protect the outer edges it suffices in
35 some circumstances to form a sufficiently thick layer.

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Optimum results may be achieved with a layer of foam material whose compressibility reduces with increased load. The foam material thus becomes increasingly harder so that even in the event of large loading 5 penetration to the frame is prevented.

The height of the support structure determines the possible jump height above the water surface.

10 Usually efforts will be made to limit the height of the support structure as far as possible. In this connection, it is then particularly advantageous if the structure forms an opening at least beneath the central region of the web. This opening enables 15 deflection of the web down to the water surface or even immersion into the water, so that the apparatus can be constructed with minimum height of the support structure even for extreme loading conditions.

20 According to a further preferred embodiment, the support structure has a plurality of floating platforms which are connected together by bridges. The platforms can be allocated to defined support points, for example in a rectangular arrangement 25 where a rectangular or square trampoline is required. With round or oval trampolines, the float will likewise be round or oval. The bridges are preferably also buoyant in order to increase the loading capacity of the float body.

30

The support structure may include a float body of any arbitrary shape, for example U-shaped. However, it is more advantageous to form an annular float body, since in this manner a symmetrical load distribution 35 is achieved.

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In some circumstances it is advantageous to stabilize the apparatus in such a manner that it does not yield so strongly to the impact of the jumper, since otherwise a part of the acceleration effect of the 5 trampoline is lost. To achieve this stabilization, the support structure, e.g. the float body, is preferably weighted.

In this connection, in a further development of the 10 invention, it is proposed to provide a hollow body provided with at least one inlet opening for ballast material. By means of this inlet opening, the hollow body can be flooded as desired. Alternatively, it can be partially filled with sand. This is a clear 15 possibility because in normal cases sand is available on site. In both cases, the hollow body can be easily emptied for transport.

Another advantageous possibility for ballasting is to 20 secure ballast weights to the support structure. Above all, a ballast plate extending substantially over the entire bottom surface of the structure is of advantage, since the entire water mass located thereon takes part in the stabilization effect. This 25 applies in particular when the structure includes a float body which has through openings or is annular.

In some circumstances, it is advantageous to provide a float body which is stiffened, particularly with 30 crosswise extending struts. This provision can for example be applied if the float body consists of elastic material or even if the float body, as proposed in a further development of the invention, is constructed from a plurality of float elements 35 releasably secured together. This offers high flexibility in the configuration of the float body and brings advantages in transport and assembly.

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Suitable and well tried float elements are commercially available.

Advantageously, the support structure includes a frame which engages the inner and outer sides of the float elements so that the latter are loaded as uniformly as possible. In this way, the tendency of mutual twisting under load is at least reduced.

10 Furthermore, the support structure may include a frame which preferably engages on the common securing points of the float elements, since defined securing points are already provided here, so that the mounting presents no difficulties. In this
15 embodiment, the support frame is advantageously releasably connected to the float body. In this way, mobile apparatus can be achieved which can be disassembled when necessary and reassembled at another location.

20

According to a preferred further development of the invention, a peripheral cover is provided to shield the support structure. This cover protects the support structure from unauthorized access, so that
25 in this respect no danger is presented. Moreover, it provides the apparatus with a pleasing appearance. Finally, it can serve to present advertising or other information.

30 The inventive disclosure also extends to such combinations of the features of the invention which deviate from the above discussed combinations.

The invention will be described in the following in
35 more detail with reference to preferred embodiments in conjunction with the attached drawings, in which:

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Figure 1 is a perspective side view of apparatus according to the invention;

Figure 2 is a view corresponding to Figure 1 with the 5 cover removed;

Figure 3 is a bottom view of the apparatus according to Figures 1 and 2;

10 Figure 4 is a section through the trampoline holder according to the invention;

Figure 5 is a detail of the holder according to Figure 4; and

15

Figure 6 is a modified embodiment of a support structure; and

Figure 7 is a partially sectioned perspective view 20 showing further modified embodiments of the apparatus according to the invention.

Figure 1 shows apparatus purely for leisure use which floats on water as an island accessible from all 25 sides and anchored to the ground or sea bed. The apparatus comprises a trampoline 1 supported by a buoyant structure including a float body 2 spaced from the trampoline 1. A cover 3 extends around the apparatus to serve the function both of a shield and 30 also as a decorative panel or carrier of advertising material. Mounting of the trampoline 1 is possible by means of a ladder 4.

The trampoline consists of a holder 5 in which a web 35 6 is braced. The holder 5 forms a peripheral frame of rectangular form.

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For securing the trampoline on the float body 2, there is provided a support frame 7 constructed of z shaped struts 8.

5 The float body 2 consists of a plurality of float elements 9 which are releasably secured together. As shown in Figure 2, the struts 8 of the support frame 7 engage at the common securing points of the float elements 9.

10

Respective groups of four float elements 9 are combined as platforms which are located underneath the respective corners of the trampoline 1. The platforms are connected together by bridges which are
15 also formed from the float elements 9. In this manner, an annular structure results which provides an opening beneath the central region of the web 6. The web can stretch down into this opening and possibly even dip into the water. The height of the
20 support frame 7 is adapted accordingly. In the present case, the outer dimensions of the float body 2 correspond fairly exactly with those of the trampoline 1. In any event, on all sides the float body protrudes substantially not beyond the outer
25 edge of the trampoline 1. The jumper can thus be thrown into the water at any desired position. Also undesired tumbles into the water are completely without danger.

30 The apparatus can be towed in its assembled condition. It is also collapsible and correspondingly simple to transport. It can be used as a floating diving platform without using the trampoline effect. Also, the web 6 can serve as a
35 lounge bed. According to the particular construction of the trampoline 1, the illustrated play apparatus may provide a first rate sport device.

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The lower side of the apparatus according to Figure 3 clearly shows the four platforms of the float, which are arranged at the corners of the trampoline and connected together by bridges. Furthermore, struts 5 10 extending crosswise are provided which impart additional support to the assembly of the float elements 9. Moreover, the struts act as ballast. Additional ballast may be achieved by filling selected float elements, namely the float elements 10 9', with sand.

According to Figure 4, the holder 5 has in cross-section a triangular frame 11 which is padded with a convex curved layer 12 of elastic foam 15 material. The foam material is selected such that with increasing loading it becomes harder. The web 6 is secured, via springs 13, on the outer edge of the frame. In this manner, the padded frame covers the bracing of the trampoline without hindering movement 20 of the springs 13.

The layer 12 is surrounded by a foil 14, which also secures the layer to the frame 11. As shown in Figure 5, the foil 14 consists of two zones 15 and 16 25 which are adhered together at connection section 17 and 18. The link sections 17 and 18 also form connections to the frame 11.

In the support frame 7 according to Figure 6, the 30 rods 8 are formed such that they engage the inner and outer sides of the float elements 9 in order to distribute the loading onto the float elements as uniformly as possible.

35 Moreover, within the scope of the invention many possibilities for modification are conceivable. Thus, the float body can be different, e.g. round or

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oval, and even deviate from the shape of the trampoline. With appropriate height of the support frame, the central opening in the float body can be omitted. In some circumstances, it is sufficient to have the float body set back relative to the trampoline over only a part of its periphery. Furthermore, the support frame can consist of rods arranged differently or even of plate elements. For its securing onto the float body, there are likewise other possibilities. This applies in particular if the float body is manufactured in one piece. In each case, the float body can form a peripheral wear bar or be provided with such a wear bar. It also has securing devices for the anchoring means. The struts according to Figure 3 can be replaced by a ballast plate.

Moreover, the float body may include a submersible or semi-submersible element. If the element is submerged to a suitable depth, it may if required protrude beyond the outer periphery of the trampoline without danger.

Furthermore, the float body may be a flexible, inflatable structure or soft structure, in which case it may extend beyond the outer periphery of the trampoline without risk of injuring the user.

Further possible modifications of the apparatus according to the invention are shown in Figure 7, which is a partially sectioned perspective view. For increased stability and improved load distribution onto the float elements 9, the support frame may include rods 8' at the corners of the float body 2 in the manner shown in Figure 7. Furthermore, the rods 8' can be of similar construction to that of the rods 8 described with respect to Figure 6.

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As an alternative or additional ballasting means, a hollow annular body 100 such as an expandable hose or the like may be provided above the float body 2 in the manner shown in Figure 7. If necessary, this can be secured in any convenient manner to the float body 2 and/or the support frame. The annular body 100 is provided with a suitable connection for filling with water or the like to provide the ballast weight. This annular hollow body represents a practical and convenient means for providing ballast, as it can be filled and emptied quickly and is easily mounted in the apparatus according to the invention and may be transported without difficulty.

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Claims:

1. Sport and/or leisure apparatus comprising a trampoline which has a holder and a braced web therein, and a support structure secured to the holder, characterised in that the support structure (2, 7) is buoyant.
2. Apparatus according to claim 1, characterised in that the support structure includes a float body (2) whose outer edge protrudes substantially no further than the outer edge of the trampoline (1) at least over a part of its periphery.
3. Apparatus according to claim 1 or 2 characterised in that the holder (5) has a padded frame (11) which covers and is spaced from the bracing (13) of the web (6).
4. Apparatus according to claim 3 characterised in that the frame (11) is triangular in section.
5. Apparatus according to claim 3 or 4 characterised in that the frame (11) is padded with a layer (12) of elastic material having convex curvature in cross-section and which extends at least inwardly across the frame.
6. Apparatus according to claim 5 characterised in that the layer (12) consists of foam material whose compressibility reduces with increasing load.
7. Apparatus according to claim 5 or 6 characterised in that the layer (12) is encased with a foil (14) consisting of two longitudinally extending portions (15, 16), whose connected sections (17, 18) are secured to the frame (11).

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8. Apparatus according to any of claims 1-7 characterised in that the support structure (2) provides an opening at least beneath the central region of the web (6).
9. Apparatus according to any preceding claim characterised in that the support structure (2) comprises a plurality of floatable platforms which are connected together by bridges.
10. Apparatus according to claim 9 characterised in that the bridges are buoyant.
11. Apparatus according to any of claims 8-10 characterised in that the support structure comprises an annular float body (2).
12. Apparatus according to any of claims 1-10 characterised in that the support structure is ballasted.
13. Apparatus according to claim 12 characterised in that the support structure includes a hollow body provided with at least one inlet opening for ballast material.
14. Apparatus according to claim 12 or 13 characterised in that ballast weights are secured to the support structure.
15. Apparatus according to any of claims 12-14 characterised by a ballast plate extending substantially over the entire lower surface of the support structure.
16. Apparatus according to any of claims 1-14 characterised in that the support structure is stiffened with crossed struts (10).

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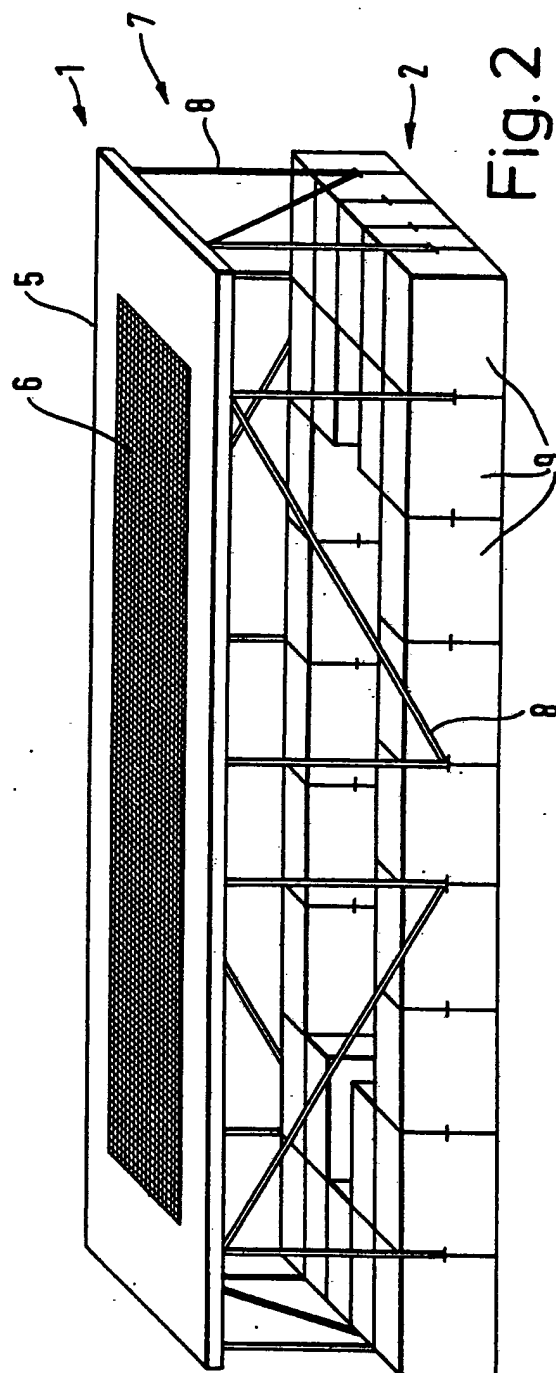
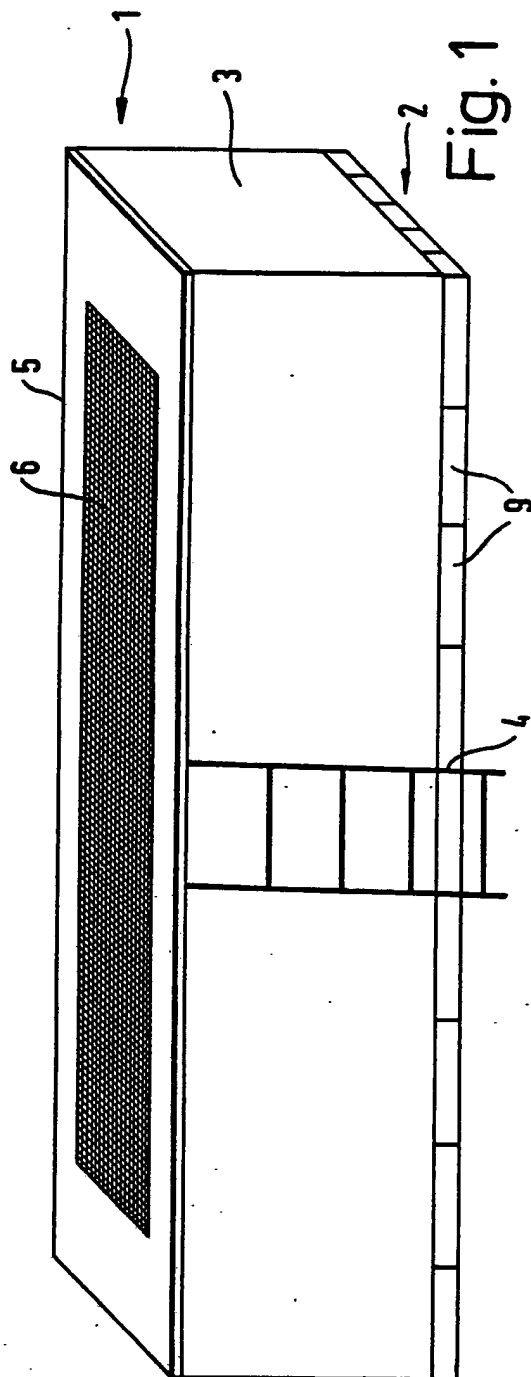
17. Apparatus according to any of claims 1-16 characterised in that the support structure comprises a plurality of float elements (9) which are preferably releasably secured together.

18. Apparatus according to claim 17 characterised in that the support structure includes a frame (7) which engages on the inner and outer sides of the float elements (9).

19. Apparatus according to claim 17 or 18 characterised in that the support structure includes a frame (7) which engages on the common securing points of the float elements (9).

20. Apparatus according to any of claims 1-19 characterised in that the support structure includes a frame (7) releasably connected to a float body (2).

21. Apparatus according to any of claims 1-20 characterised by a peripheral cover (3) shielding the support structure.



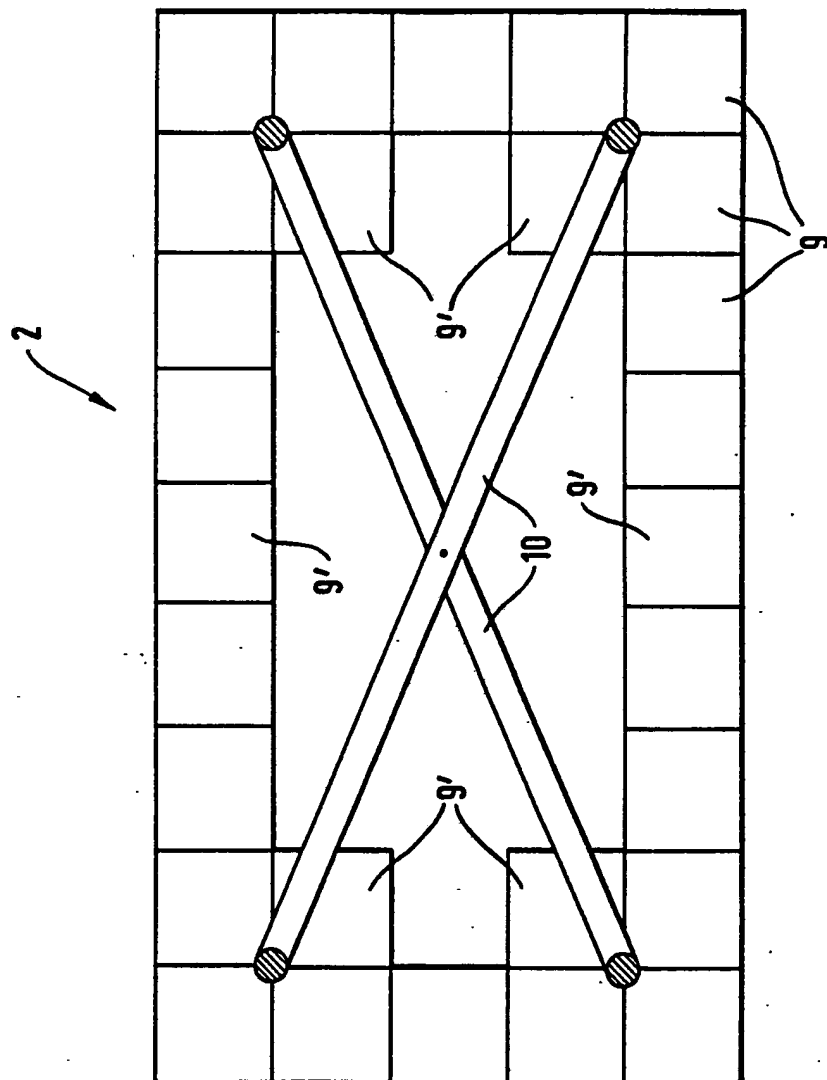
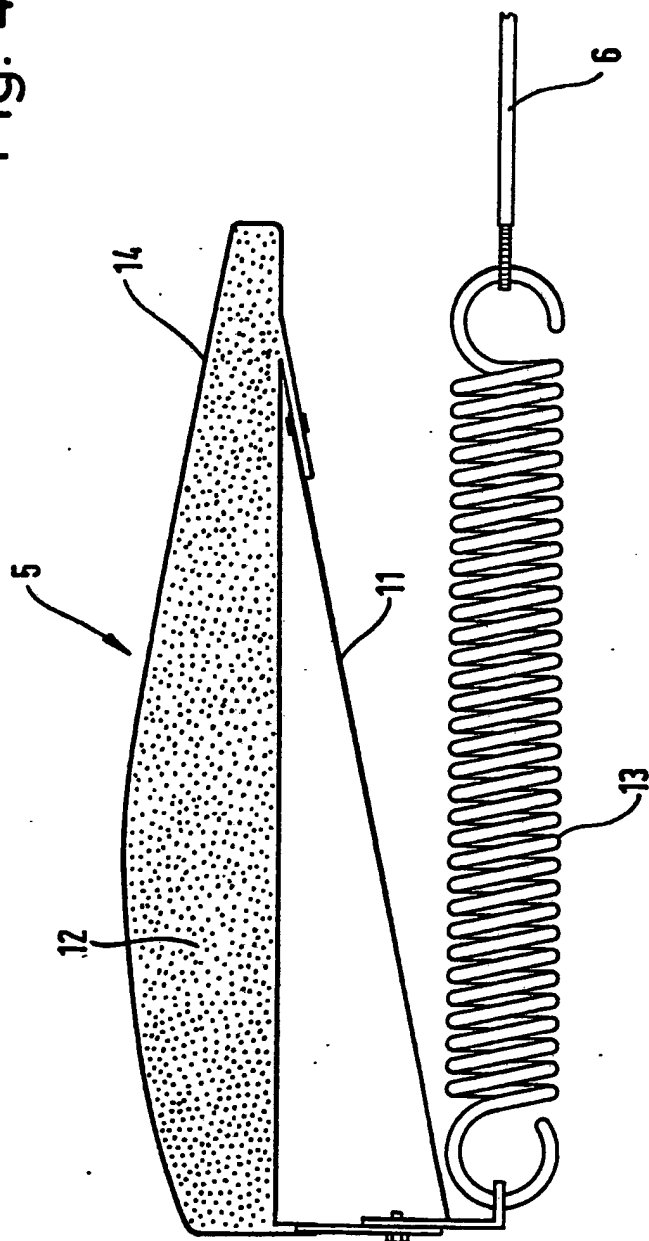


Fig. 3

Fig. 4



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Fig. 5

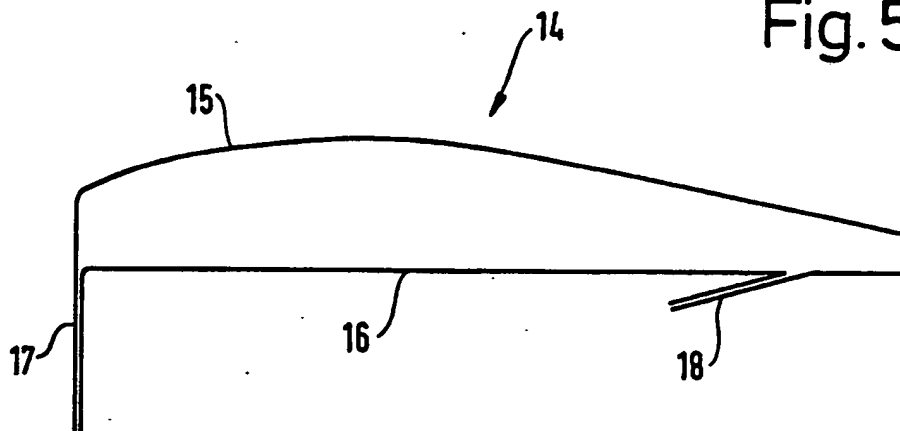
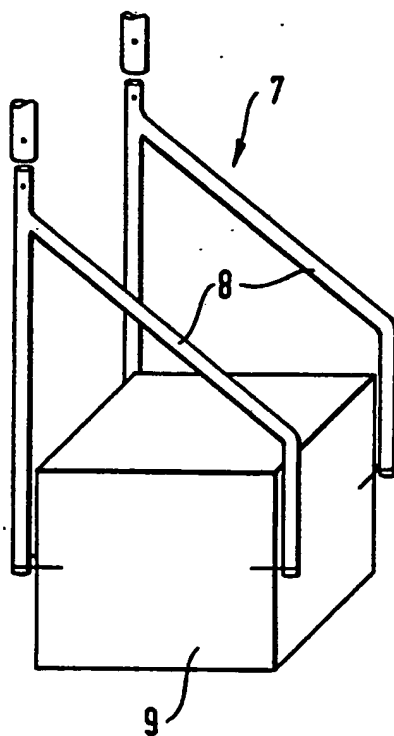
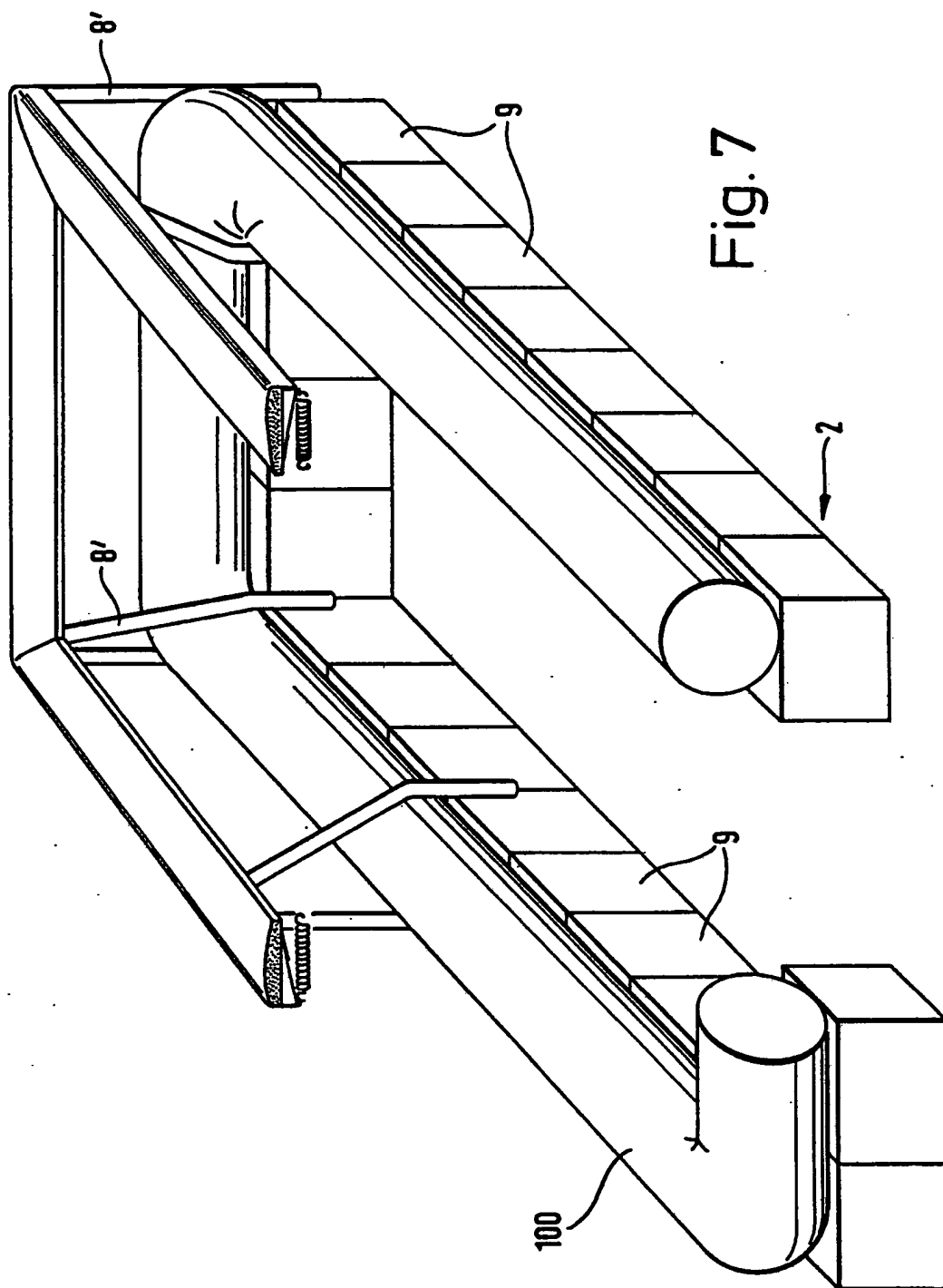


Fig. 6





INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 93/00399

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl. 5 A63B5/11		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	A63B	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	EP,A,0 177 662 (CORVINUS & ROTH GMBH) 16 April 1986 see claim 1; figures	1,3-6,8, 11,20
X	US,A,4 576 375 (ROBERTS) 18 March 1986 see column 5, line 2 - line 26; figures	1,3,8,11
X	AU,B,531 945 (FETTERLY PTY. LTD.) 3 November 1983 see page 7, line 11 - line 17; figures 1-5,10-12	1,3,8, 11,16, 17,20
P,X	EP,A,0 473 445 (WATERTRAMPS INTERNATIONAL LIMITED) 4 March 1992 see abstract; figures 1A,2A,6,16	1,3,8, 11,20
-/--		
<p>¹⁰ Special categories of cited documents: ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
10 JUNE 1993	14. 06. 93	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	Mark Jones	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category ^o	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claims No.
E,X	EP,A,0 542 455 (WATERTRAMPS INTERNATIONAL LIMITED) 19 May 1993 see abstract; figure 10 ---	1,3,8,11
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**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

EP 9300399
SA 70942

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
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10/06/93

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